

**CLAIMS:**

1. In a method for making chemical pulp comprising the steps of digesting wood chips in the digester to create unbleached pulp and then bleaching the pulp using peroxide as the bleaching agent, the improvement comprising treating the pulp with from about 0.01 weight % to about 5 weight % of a Mixture comprising

5 a) from about 40 weight % to about 60 weight % water;

b) from about 20 weight % to about 95 weight % diethylenetriaminepentakis(methyl)phosphonic acid or its known salts;

c) from about 5 weight % to about 50 weight % polyacrylic acid or its known salts; and

10 optionally

d) from about 1 weight % to about 20 weight % of one or more inert compounds;

wherein said Mixture is added before or during bleaching.

2. The method of Claim 1, wherein the pulp is a recycled pulp, wherein said recycled pulp comprises chemical pulp or mechanical pulp or a blend of chemical and mechanical pulp.

15 3. The method of Claim 1, wherein the total amount of peroxide present in the pulp is reduced, while the target brightness for the pulp is still obtained.

4. The method of Claim 1, wherein the brightness of the pulp is increased.

5. The method of Claim 1, wherein the improvement realized is an improvement in oxygen delignification.

20 6. The method of Claim 1, wherein the total amount of magnesium in the pulp is reduced, while the target brightness for the pulp is still obtained.

7. The method of Claim 1, wherein the total amount of magnesium in the pulp is reduced, while the target viscosity for the pulp is still obtained.

8. In a method for making mechanical pulp comprising the steps of grinding or

25 refining wood to create unbleached pulp and then bleaching the pulp; using peroxide or

hydrosulfite as the bleaching agents, the improvement comprising treating the pulp with from about 0.01 weight % to about 5 weight % of a Mixture comprising

- a) from about 40 weight % to about 60 weight % water;
- b) from about 20 weight % to about 95 weight %
- 5 diethylenetriaminepentakis(methyl)phosphonic acid or its known salts;
- c) from about 5 weight % to about 50 weight % polyacrylic acid or its known salts; and optionally
- d) from about 1 weight % to about 20 weight % of one or more inert compounds;

wherein said Mixture is added before or during bleaching.

10 9. The method of Claim 8, wherein the pulp is a recycled pulp, wherein said recycled pulp comprises chemical pulp or mechanical pulp or a blend of chemical and mechanical pulp.

10. The method of Claim 8, wherein the total amount of sodium silicate present in the pulp is reduced, while the target brightness for the pulp is still obtained.

15 11. The method of Claim 8, wherein the total amount of ethylenediaminetetraacetic acid or its known salts present in the pulp is reduced, while the target brightness for the pulp is still obtained

12. The method of Claim 8, wherein the total amount of peroxide or hydrosulfite present in the pulp is reduced, while the target brightness for the pulp is still obtained.

20 13 The method of Claim 8, wherein the total amount of both sodium silicate and peroxide in the pulp is reduced, while the target brightness for the pulp is still obtained.

14. A composition of matter comprising:

- a) from about 40 weight % to about 60 weight % water;
- b) from about 20 weight % to about 95 weight %

25 diethylenetriaminepentakis(methyl)phosphonic acid or its known salts;

- c) from about 5 weight % to about 50 weight % polyacrylic acid or its known salts;  
and optionally
- d) from about 1 weight % to about 20 weight % of one or more inert compounds.

5           15.    The composition of Claim 14 comprising

- a) about 50 weight % water;
- b) about 29 weight % diethylenetriaminepentakis(methyl)phosphonic acid or its  
known salts;
- c) about 14 weight % polyacrylic acid or its known salts;  
10           and
- d) about 7 weight % of one or more inert compounds.

16.    The composition of Claim 14 wherein said  
diethylenetriaminepentakis(methyl)phosphonic acid or its  
15           known salts is sodium diethylenetriaminepentakis(methylene) phosphonate.

17.    The composition of Claim 14 wherein said polyacrylic acid or its known salts is  
sodium polyacrylate.

20       18.    The composition of Claim 14 wherein said about 7 weight % of one or more  
inert compounds selected from the group consisting of sodium sulfate and  
ammonium sodium sulfate and sodium chloride is about 4.5 weight % sodium  
chloride, about 0.25 weight % ammonium sodium sulfate and about 2.25 weight  
% sodium sulfate.

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